

# MR System<sup>®</sup>

Section 07 55 56

## Fluid-Applied Reinforced Elastomeric Latex Membrane for Metal Roofs

### PART 1 – GENERAL

#### 1.1 Description

- A. Work included: all labor, materials, equipment and accessories to furnish and install fluid-applied Benchmark<sup>®</sup>, Rapid Roof<sup>®</sup> III, Rapid Roof<sup>®</sup> HV and PUMA<sup>®</sup> XL roof coatings and Encase Metal Primer over approved metal roof decks.
- B. Related work specified elsewhere:
  - 1. Sheet metal work
  - 2. Prefabricated roof specialties
  - 3. Roof accessories

#### 1.2 Quality Assurance

- A. Certification of materials: Conklin Company Inc. shall provide, upon written request, notarized certification that the material furnished meets the physical properties set forth in this specification.
- B. Requirements of regulatory agencies: furnish and install all roofing materials required to meet regulatory agency standards and appropriate building codes. If changes are required of drawings or specifications in order to meet requirements of regulatory agencies specified or to provide guarantee specified, cost of such changes shall be included. Any changes to drawings or specifications shall be approved by architect before work commences.

#### 1.3 Submittals

- A. Product data: shall include manufacturer's product specifications and installation instructions.
- B. Certified tests: submit copies of certified test reports, which indicate compliance with the specified minimum physical properties and performance requirements for materials.

#### 1.4 Product Delivery, Storage and Handling

- A. Delivery of materials:
  - 1. Membrane materials shall be delivered to the job site in Conklin Company's original, unopened containers bearing manufacturer's original label.
  - 2. Related miscellaneous items shall be delivered to job site in new condition and, where applicable, properly labeled.
- B. Storage of materials:
  - 1. Store materials in accordance with manufacturer's recommendations.
  - 2. Store acrylic latex materials so they will not freeze.

- C. Handling and protection of materials: meet requirements of manufacturer’s recommendations for handling and protection of materials during installation. Handle materials so that they are not contaminated by foreign materials.
- D. Damaged materials: contaminated or damaged materials shall not be used in the installation and shall be removed from site immediately upon discovery.
- E. **SAFETY & FIRST AID**  
**See product Safety Data Sheets or product container label to review safety information provided.**

## 1.5 Job Conditions

- A. Environmental requirements:
  - 1. General requirements: application of coatings shall not proceed unless environmental conditions are suitable as prescribed by the manufacturer of the material being supplied.
  - 2. Application temperature requirements:
    - a. Ambient: application shall not proceed when ambient temperature is less than 40°F and rising or greater than 100°F.
    - b. Surface: application shall not proceed when surface temperature is less than 40°F and rising or greater than 120°F.
- B. Protection of unrelated work: take all measures necessary to protect unrelated work and surfaces to avoid overspray from coatings.

## PART 2—PRODUCTS

### 2.1 Fluid-Applied Reinforced Elastomeric Latex Membrane for Metal Roofs

- A. Acceptable manufacturer: Conklin Company Inc., Shakopee, Minn., “MR System”
- B. Description: a seamless membrane system consisting of Rapid Roof III, Rapid Roof HV or Benchmark fluid-applied acrylic latex base coat with a fabric embedded over the seams and fluid-applied acrylic latex top coat.
- C. Physical and performance requirements for acrylic latex coating system: Rapid Roof III\*, Rapid Roof HV\*, Benchmark\*, or PUMA XL\* consisting of an acrylic latex base coat and top coat, shall meet ASTM D412 requirements when tested with Spunflex II.
  - 1. Fire resistance (ANSI/UL 790 and CAN/ULC – 5107M: Class A)
  - 2. Factory Mutual 4470 – pass (Benchmark only)
  - 3. Dade County, Florida Acceptance NO.: 13-0326.04  
 NOTE: Rapid Roof HV is not classified for exterior fire exposure.  
*\*Refer to Conklin Company Product Specification Sheets ([www.conklin.com/roofing](http://www.conklin.com/roofing))*
- D. Physical and performance requirements of Spunflex II polyester fabric:
  - 1. Fabric type: knitted polyester
  - 2. Yarn denier: 150 Construction: 29 x 29 per square inch
  - 3. Nominal weight: 4.75 ounces per square yard
  - 4. Mullen burst: 200+ psi (ASTM D751)
  - 5. Elongation (ASTM D1682):
    - a. MD: 67% MD = Machine Direction
    - b. XD: 205% XD = Cross Direction

6. Grab breaking strength (ASTM D5034):
  - a. MD: 137 pounds
  - b. XD: 67 pounds
7. Fabric thickness (FTM-5136): .032 inch

## 2.2 Miscellaneous Materials

- A. Caulking: Kwik Kaulk® caulking compound as furnished by membrane manufacturer.
- B. Primer: Encase Metal Primer as furnished by membrane manufacturer.
- C. Cleaner: Rust Off® cleaner for galvanized surfaces.
- D. Butyl Tape as furnished by membrane manufacturer.

## PART 3—EXECUTION

### 3.1 Inspection

- A. Inspect roof surface receiving work specified to ensure that the following conditions exist:
  1. Metal roof surfaces shall be dry, clean and free of dirt, rust, corrosion and other coatings or conditions which could affect the bond of the roof membrane system.
  2. Roof surface shall be free of ponding water. Slope of roof area shall be no less than ¼" per foot. A roof surface containing 36 or more square feet of water in an area ¼" deep or more 48 hours after a rain shall be considered unacceptable. Small "bird baths" cannot account for more than 5% of the entire roof surface.
  3. Roof surfaces which are chalky, friable, waxy or oily are not acceptable to receive membrane.
  4. Inspect condition of flashing details adjacent to protrusions, penetrations, curbs, walls, drains and roof edge to ensure that details are acceptable and will maintain a weather tight installation.
  5. System can only be applied over factory-applied finishes. **System cannot be applied over field-applied finishes.**
  6. All joining metal sections shall be properly closed and mechanically fastened or welded.
  7. Acceptable gauge for metal shall be 18 to 26 gauges.
- B. Metal Roofing System is recommended for bare metal (steel, galvanized steel and aluminum) and pre-finished (factory-applied coating) metal panels.

### 3.2 Preparation

- A. Preparation of metal deck:
  1. Acid etch surface of galvanized metal with a 1:20 solution of Rust Off® cleaner to remove all conditions which will affect bond of roof membrane and follow with a thorough water rinse. Power wash and scrub all other approved surfaces.
  2. Clean rusted areas until free of loose and flaky rust.

3. Priming:
  - a. Substrates that are less than or equal to a 3:12 pitch must be primed entirely with Encase Metal Primer, creating an unbroken monolithic film.
  - b. Substrates greater than a 3:12 pitch; Encase Metal Primer can be used at the contractor's discretion.

*\*Rust is not covered under any Conklin warranty.*
4. Retighten all fasteners and secure substrates firmly. Replace fasteners or washers where missing. When prior movement has enlarged the fastener hole, install a new oversized fastener to effectively tighten and secure the deck substrate. Replace all loose nails with approved fasteners.
5. Caulk all exposed fastener heads and seams (wider than 1/8")
6. Just prior to application, remove all dirt, dust and other contaminants by brushing, vacuuming or power blowing.

### 3.3 Application

- A. Application method: both base coat and top coat shall be applied by airless spray, brush or ¾" to 1¼" nap roller.
- B. Application procedure:
  1. Develop a systematic method for application of coating and fabric to metal seams. *(Refer to technical bulletin B59234, for standing seam roofs. Kwik Kaulk is used on vertical seams (No Fabric )*
  2. For horizontal (end lap) seams: apply a 6" wide strip of Conklin acrylic latex base coat at a rate of 1.75 gallons per square (200 lineal feet) and immediately embed the 5" wide Spunflex II polyester tape into the wet coating with a brush or roller, making sure the tape is flat and wrinkle-free by brushing or rolling from center out at 45° angles.
  3. For vertical seams: apply a 3½" wide strip of acrylic latex base coat at a rate of 1.75 gallons per square (320 lineal feet) and immediately embed the 2 ½ "wide Spunflex II polyester tape into the wet coating with a brush or roller, making sure the tape is flat and wrinkle-free by brushing or rolling from center out at 45° angles. Do not stretch the fabric to achieve embedment. Please note: 4" wide Spunflex is an acceptable alternate.
  4. After the application of base coat and fabric, apply a second coat of Conklin acrylic latex base coat at a rate of 0.75 gallons per square for horizontal (200 lineal ft.) and vertical seams (320 lineal ft.), for a total of 2.5 gallons.
  5. Finish coat: the entire roof surface must be coated with Conklin acrylic latex top coat at a rate of 1.9\* gallons per square.  
*\*To achieve minimum requirements, the application rates listed include 15% for application loss and 10% to compensate for surface texture.*
- C. Optional Butyl Tape application:
  1. Develop a systematic method for application of Butyl Tape to metal seams.
  2. For horizontal (end lap) seams: apply the 6" wide Butyl Tape over the center of panel seam. Peel back three to four inches of release liner. Press down firmly.

While holding roll slightly above surface, peel back 5” to 6” more of release liner and press down, keeping it centered on seam. Roll tape down firmly and evenly. The use of a hand held roller is recommended. DO NOT stretch the Butyl Tape.

3. For vertical seams: apply the 3” wide Butyl Tape over the metal panel seam. Peel back three to four inches of release liner. Press down firmly. While holding roll slightly above surface, peel back five to six inches more of release liner and press down, keeping it over the seam. Roll tape down firmly and evenly. The use of a hand held roller is recommended. DO NOT stretch the Butyl Tape.
4. The 3” tape should not overlap onto the 6” wide tape. Cut the tape to ensure it ends tightly adjacent to all horizontal tape.
5. After the tape has been applied over the metal roof seams, apply Conklin Kwik Kaulk along top or both edges of the 6” wide tape (horizontal seams). The use of Kwik Kaulk along these edges, when feathered, reduces potential “water damming” on horizontal seams.
6. Kwik Kaulk is recommended at all details where “T” shaped intersections occur with the Butyl Tape. This will eliminate potential “fish mouths” and keep the tape adhered tightly to roof surface.

D. Finish coat application:

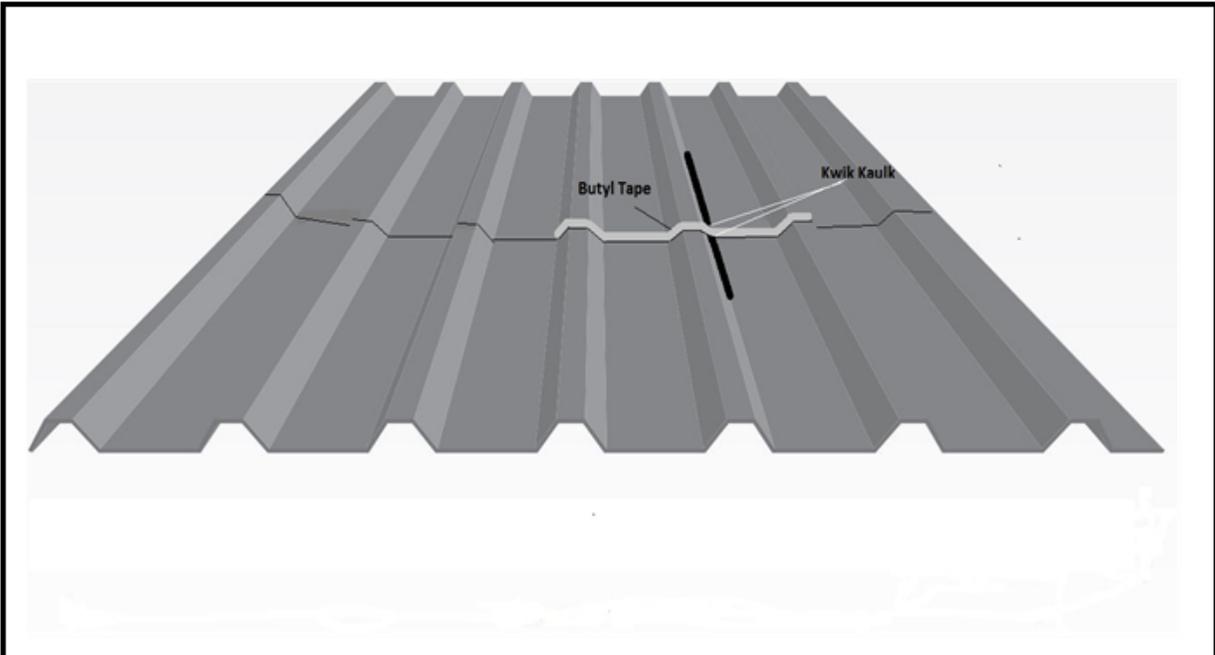
1. After the Butyl Tape has been installed over the metal roof seams, apply Conklin acrylic latex top coat directly over the tape at a rate of 0.75 gallons per square.
  - a. Allow the coating to thoroughly dry before proceeding to step 2 below.
  - b. The purpose of this step is to ensure the Butyl Tape and Spunflex II fabric are thoroughly embedded in coating.
2. The entire roof surface must be coated with Conklin acrylic latex top coat at a rate of 1.9\* gallons per square. Ensure all Butyl Tape is thoroughly covered in top coat.

*\*To achieve minimum requirements, the application rates listed include 15% for application loss and 10% to compensate for surface texture.*

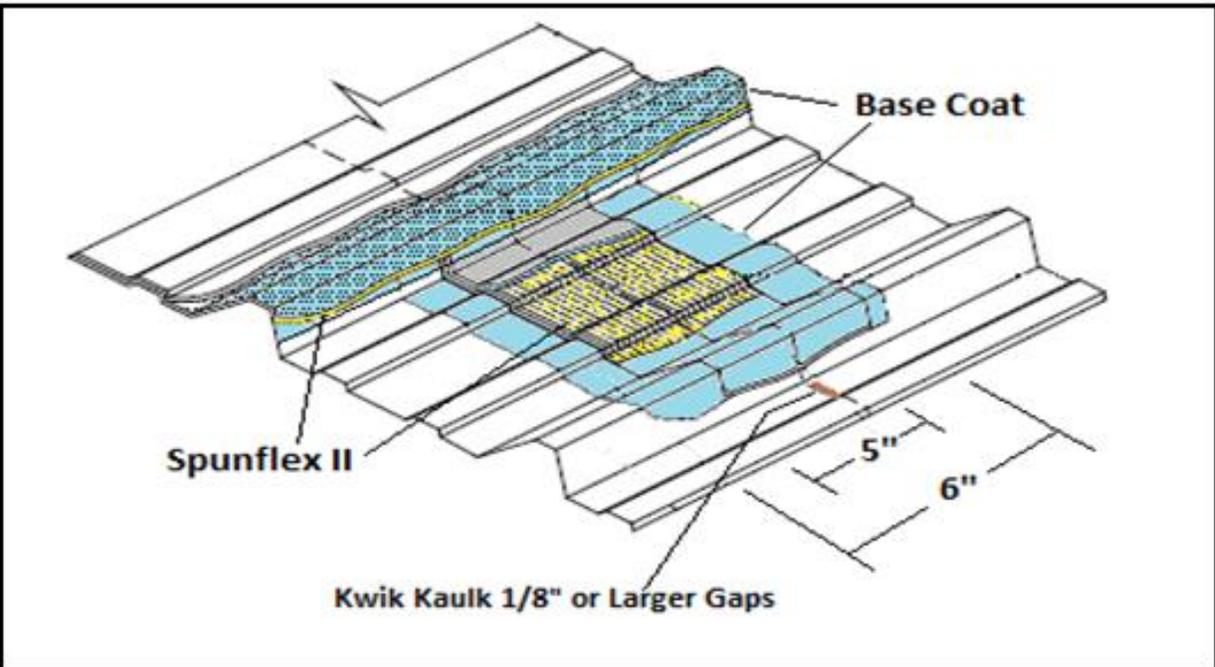
<u>Product</u>	<u>Base Coat</u>	<u>Top Coat</u>	<u>Total Seams</u>
RR HV	13.5 mils	13.5 mils	48 mils
RRIII	13.5 mils	13.5 mils	48 mils
Benchmark	13.5 mils	13.5 mils	48 mils
PUMA XL	13.5 mils	13.5 mils	48 mils

*\*Please note: the film thickness measurement of 48 dry mils indicates the film thickness of the coating and embedded Spunflex II fabric. The MR System does require embedding Spunflex II fabric on all seams. If the optional Butyl Tape is used, refer to section 3.3 C for details.*

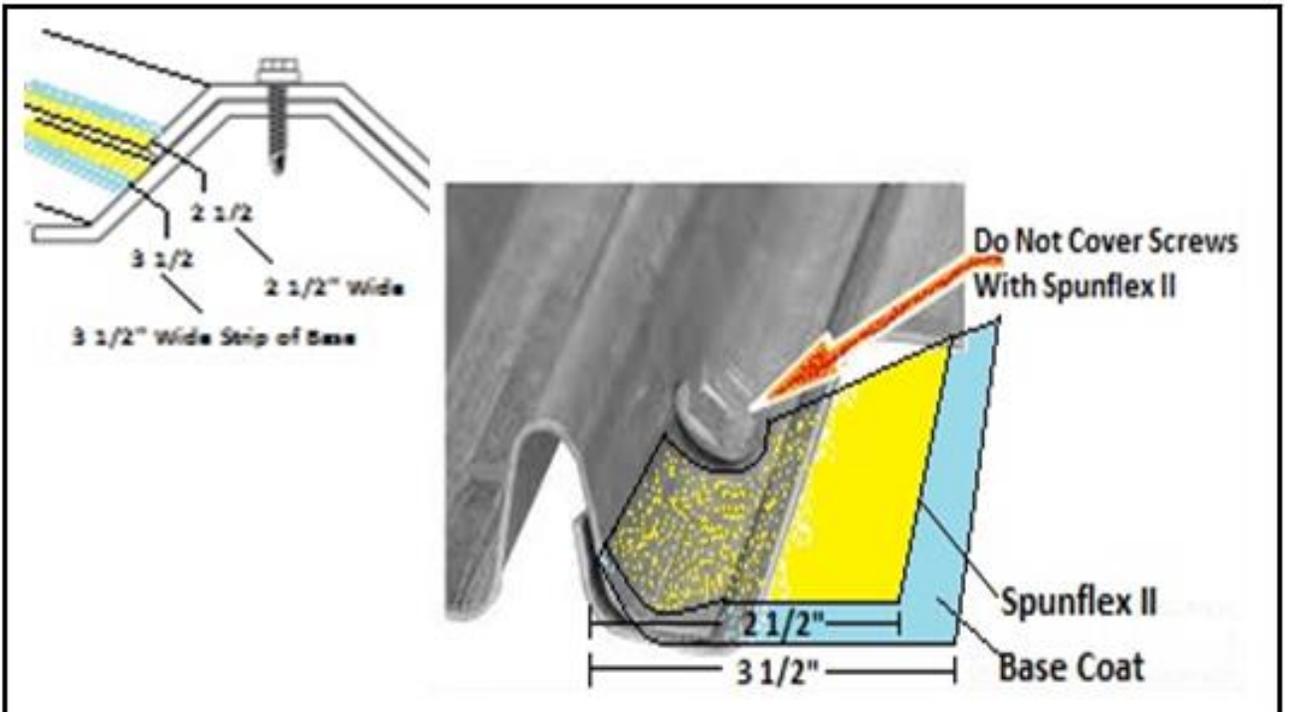
**FOR STANDING SEAM ROOFS**  
**Refer to:**  
**TECHNICAL BULLETIN *B-5-92-34***  
**Available at: [www. Conklin.com](http://www.Conklin.com)**



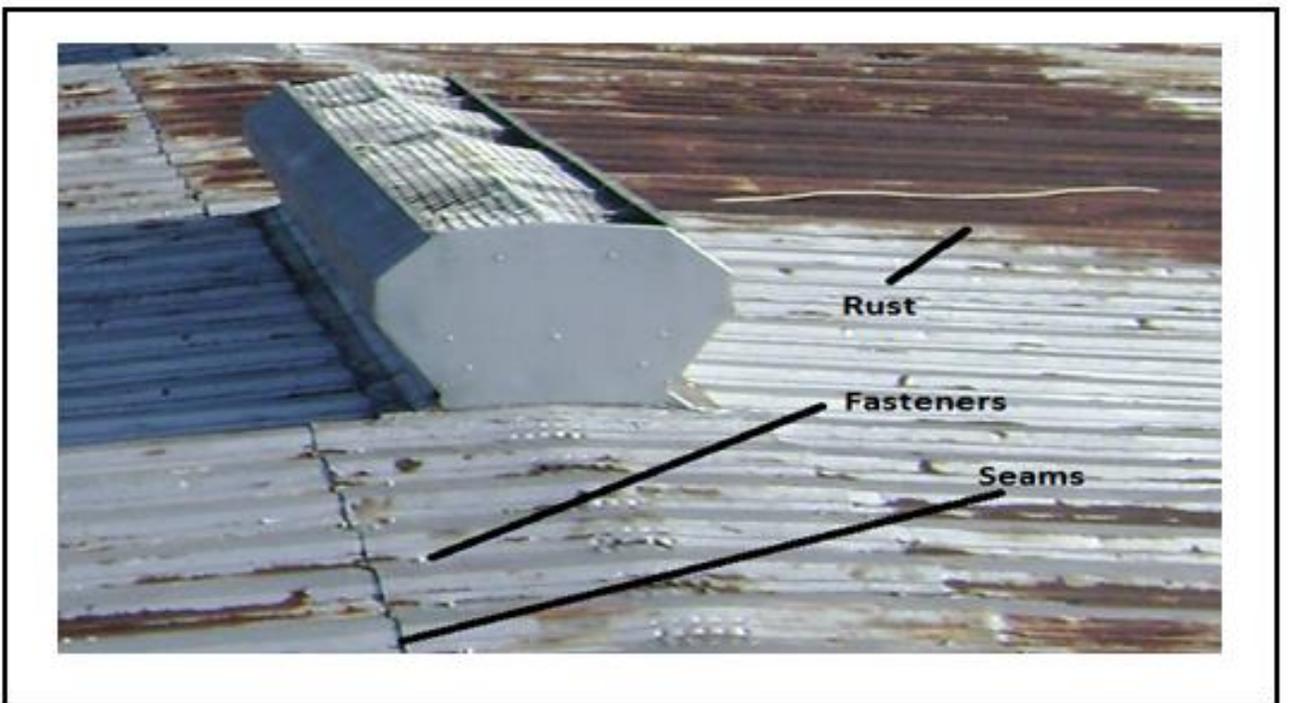
	<b>Butyl Tape Caulking</b>		ISSUE / REVISION Date:	Detail Number.  <b>BTC - 2</b>
	MR Metal Roof System	Acceptable Products Benchmark, Rapid Roof III, Rapid Roof HV, PUMA XL	3/28/2017	



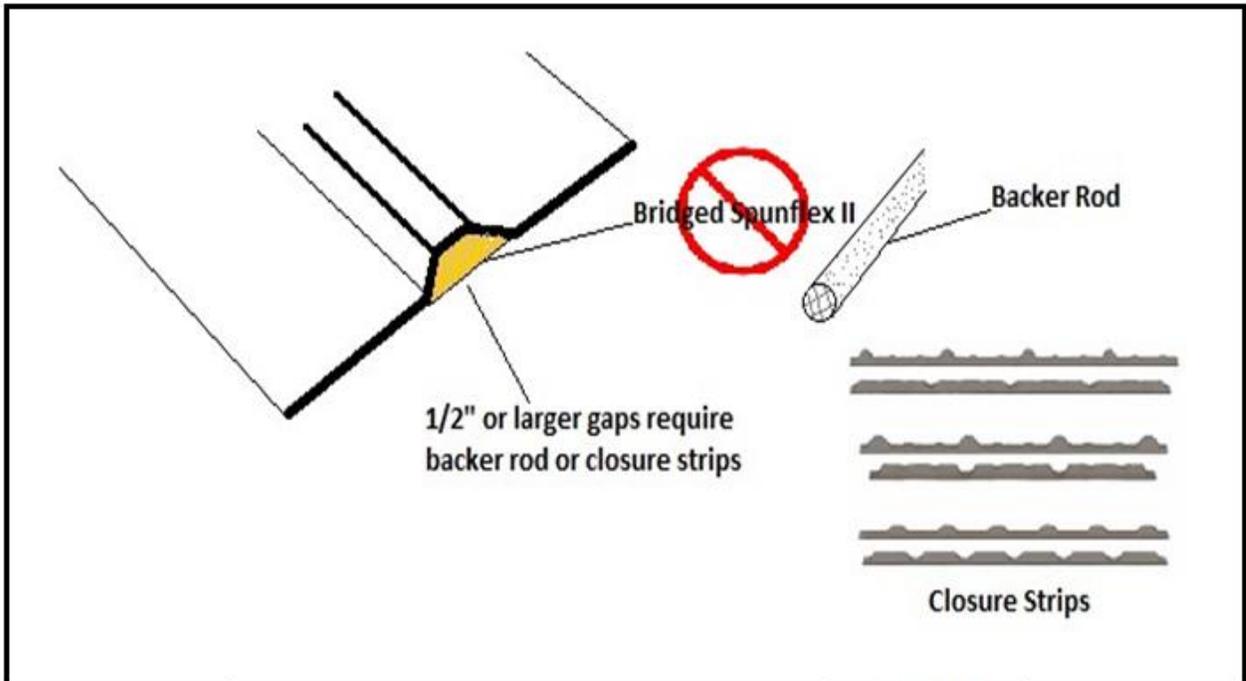
	<b>Vertical and Horizontal Seam Treatment Detail</b>		ISSUE / REVISION Date:	Detail Number.  <b>ST - 2.1</b>
	MR Metal Roof System	Acceptable Products Benchmark, Rapid Roof III, Rapid Roof HV, PUMA XL	3/28/2017	



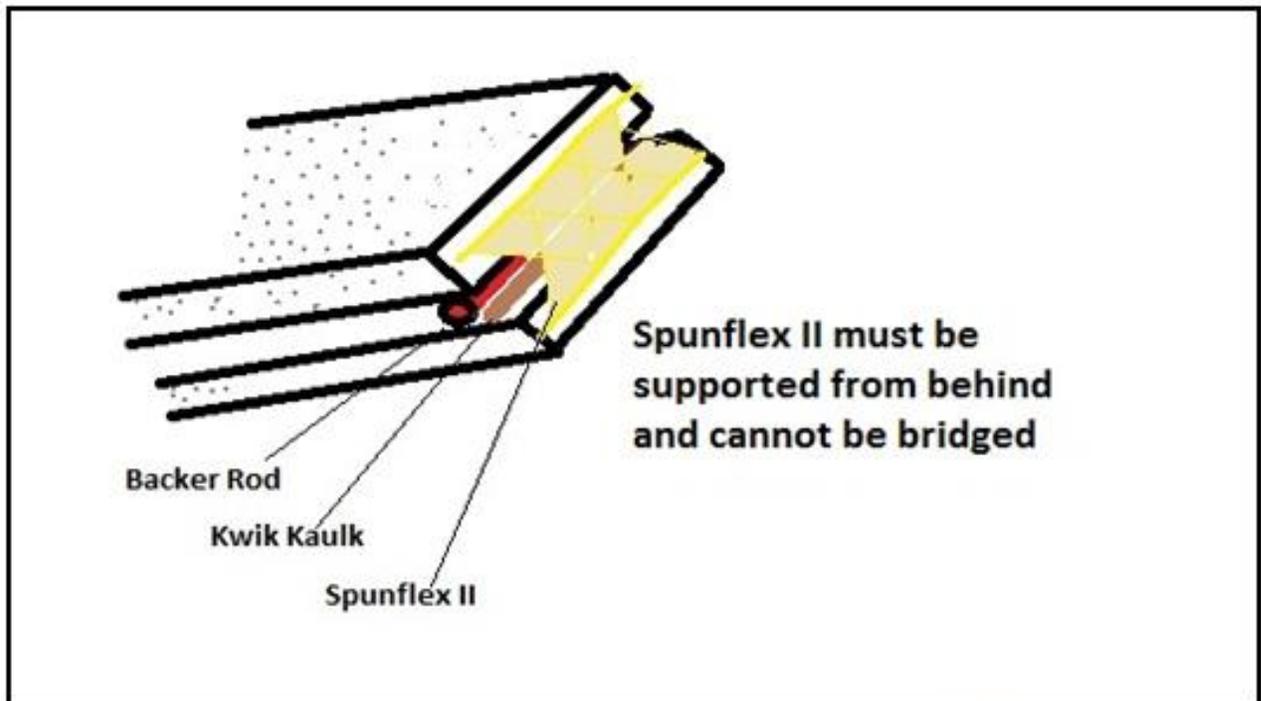
	<b>Vertical Seam Treatment Detail</b>		ISSUE / REVISION Date:	Detail Number.
	MR Metal Roof System	Acceptable Products Benchmark, Rapid Roof III, Rapid Roof HV, PUMA XL	3/28/2017 NOT TO SCALE	<b>ST - 4.1</b>



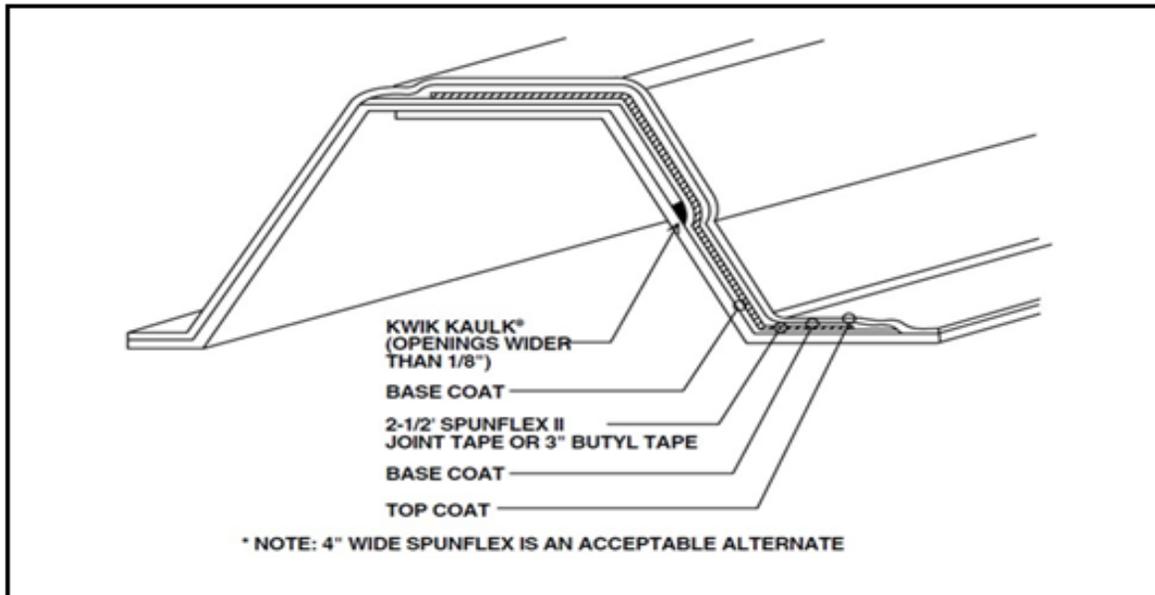
	<b>Rust, Fasteners, Seams Detail</b>		ISSUE / REVISION Date:	Detail Number.
	MR Metal Roof System	Acceptable Products Benchmark, Rapid Roof III, Rapid Roof HV, PUMA XL	3/28/2017 NOT TO SCALE	<b>RFS - 3.2</b>



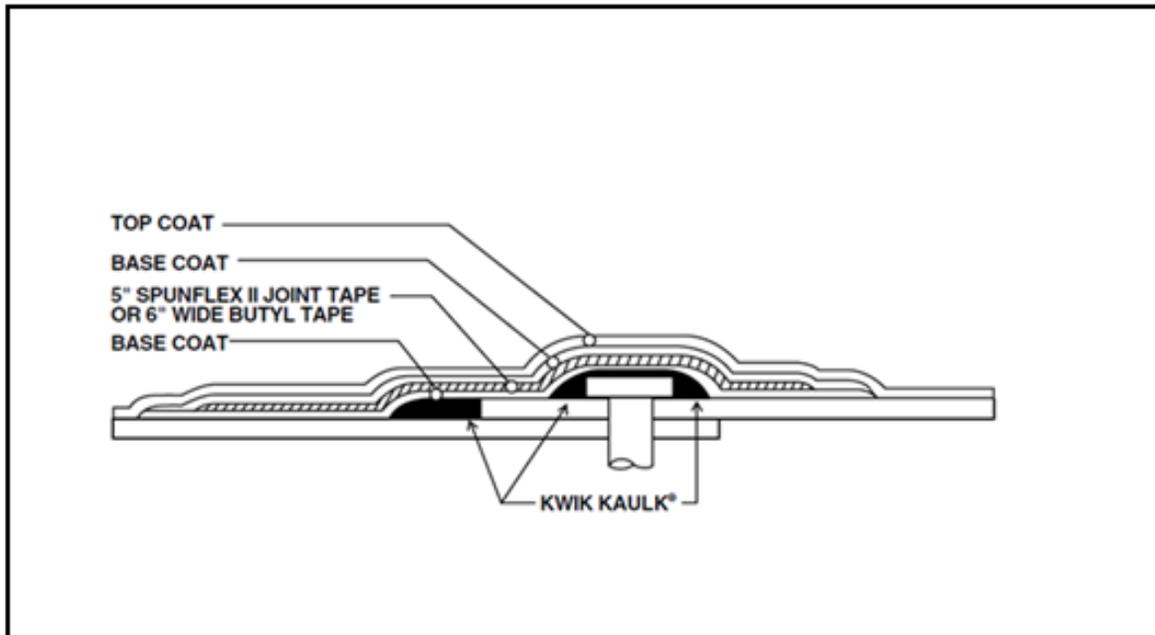
	<b>Backer Rod and Caulking</b>		ISSUE / REVISION Date: 3/29/2017	Detail Number. <b>BR—1.1</b>
	MR Metal Roof System	Acceptable Products Benchmark, Rapid Roof III, Rapid Roof HV, PUMA XL	NOT TO SCALE	



	<b>Supported Spunflex II</b>		ISSUE / REVISION Date: 3/29/2017	Detail Number. <b>BR—2.2</b>
	MR Metal Roof System	Acceptable Products Benchmark, Rapid Roof III, Rapid Roof HV, PUMA XL	NOT TO SCALE	



	<b>Side Lap Detail</b>		ISSUE / REVISION Date:	Detail Number.
	MR Metal Roof System	Acceptable Products Benchmark, Rapid Roof III, Rapid Roof HV, PUMA XL	3/29/2017	<b>MR-7.1</b>
			NOT TO SCALE	



	<b>Horizontal (End Lap) Seam Detail</b>		ISSUE / REVISION Date:	Detail Number.
	MR Metal Roof System	Acceptable Products Benchmark, Rapid Roof III, Rapid Roof HV, PUMA XL	3/29/2017	<b>MR-7.2</b>
			NOT TO SCALE	

